

Isolated Wetlands and Their Functions: An Ecological Perspective

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Syllabus

SOLID WASTE AGENCY OF NORTHERN COOK
COUNTY v. UNITED STATES ARMY CORPS
OF ENGINEERS ET AL.

CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR
THE SEVENTH CIRCUIT

No. 99-1178. Argued October 31, 2000—Decided January 9, 2001

Petitioner, a consortium of suburban Chicago municipalities, selected as a solid waste disposal site an abandoned sand and gravel pit with excavation trenches that had evolved into permanent and seasonal ponds. Because the operation called for filling in some of the ponds, petitioner contacted federal respondents, including the Army Corps of Engineers (Corps), to determine if a landfill permit was required under § 404(a) of the Clean Water Act (CWA), which authorizes the Corps to issue permits allowing the discharge of dredged or fill material into “navigable waters.” The CWA defines “navigable waters” as “the waters of the United States,” 33 U.S.C. § 1362(7), and the Corps’ regulations define such waters to include intrastate waters, “the use, degradation or destruction of which could affect interstate or foreign commerce,” 33 CFR § 328.3(a)(3). In 1986, the Corps attempted to clarify its jurisdiction, stating, in what has been dubbed the “Migratory Bird Rule,” that § 404(a) extends to intrastate waters that, *inter alia*, provide habitat for migratory birds. 51 Fed. Reg. 41217. Asserting jurisdiction over the instant site pursuant to that Rule, the Corps refused to issue a § 404(a) permit. When petitioner challenged the Corps’ jurisdiction and the merits of the permit denial, the District Court granted respondents summary judgment on the jurisdictional issue. The Seventh Circuit held that Congress has authority under the Commerce Clause to regulate intrastate waters and that the Migratory Bird Rule is a reasonable interpretation of the CWA.

Held: Title 33 CFR § 328.3(a)(3), as clarified and applied to petitioner’s site pursuant to the Migratory Bird Rule, exceeds the authority granted to respondents under § 404(a) of the CWA. Pp. 166–174.

(a) In *United States v. Riverside Bayview Homes, Inc.*, 474 U.S. 121, this Court held that the Corps had § 404(a) jurisdiction over wetlands adjacent to a navigable waterway, noting that the term “navigable” is of “limited import” and that Congress evidenced its intent to “regulate at least some waters that would not be deemed ‘navigable’ under [that term’s] classical understanding,” *id.*, at 133. But that holding was based in large measure upon Congress’ unequivocal acquiescence to, and

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approval of, the Corps’ regulations interpreting the CWA to cover wetlands adjacent to navigable waters. See *id.*, at 135–139. The Court expressed no opinion on the question of the Corps’ authority to regulate wetlands not adjacent to open water, and the statute’s text will not allow extension of the Corps’ jurisdiction to such wetlands here. Pp. 166–168.

(b) The Corps’ *original* interpretation of the CWA in its 1974 regulations—which emphasized that a water body’s capability of use by the public for transportation or commerce determines whether it is navigable—is inconsistent with that which it espouses here, yet respondents present no persuasive evidence that the Corps mistook Congress’ intent in 1974. Respondents contend that whatever its original aim, when Congress amended the CWA in 1977, it approved the more expansive definition of “navigable waters” found in the Corps’ 1977 regulations. Specifically, respondents submit that Congress’ failure to pass legislation that would have overturned the 1977 regulations and the extension of the Environmental Protection Agency’s jurisdiction in § 404(g) to include waters “other than” traditional “navigable waters” indicates that Congress recognized and accepted a broad definition of “navigable waters” that includes nonnavigable, isolated, intrastate waters. This Court recognizes congressional acquiescence to administrative interpretations of a statute with extreme care. Failed legislative proposals are a particularly dangerous ground on which to rest an interpretation of a prior statute, *Central Bank of Denver, N. A. v. First Interstate Bank of Denver, N. A.*, 511 U.S. 164, 187, because a bill can be proposed or rejected for any number of reasons. Here, respondents have failed to make the necessary showing that Congress’ failure to pass legislation demonstrates acquiescence to the 1977 regulations or the 1986 Migratory Bird Rule. Section 404(g) is equally unenlightening, for it does not conclusively determine the construction to be placed on the use of the term “waters” elsewhere in the CWA. *Riverside Bayview Homes, supra*, at 138, n. 11. Pp. 168–172.

(c) Even if § 404(a) were not clear, this Court would not extend deference to the Migratory Bird Rule under *Chevron U. S. A. Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837. Where an administrative interpretation of a statute would raise serious constitutional problems, the Court will construe the statute to avoid such problems unless the construction is plainly contrary to Congress’ intent. *Edward J. DeBartolo Corp. v. Florida Gulf Coast Building & Constr. Trades Council*, 485 U.S. 568, 575. The grant of authority to Congress under the Commerce Clause, though broad, is not unlimited. See, e.g., *United States v. Morrison*, 529 U.S. 598. Respondents’ arguments, e.g., that the Migratory Bird Rule falls within Congress’ power to regulate intra-



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RESEARCH & DEVELOPMENT

Building a scientific foundation for sound environmental decisions

ISOLATED WETLANDS AND THEIR FUNCTIONS: AN ECOLOGICAL PERSPECTIVE

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Abstract: The recent U.S. Supreme Court case of *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* (SWANCC) has had profound implications on the legal status of isolated wetlands. As a result, policymakers need ecological information on the definition and functions of isolated wetlands to respond to this decision. The term "isolated wetlands" is of fairly recent usage and has been poorly defined. In response, I recommend Tiner's (2003b) definition as wetlands "that are completely surrounded by upland." Isolation needs to be considered with respect to specific processes and functions. I suggest that isolation not be viewed discretely but be considered within an isolation-connectivity continuum. Isolation has a fundamental influence on the way water enters and leaves a wetland. This consequently affects any wetland function that depends on water as a vector (e.g., pollutant transport and certain types of dispersal). These wetlands can also have a high level of endemism, extensive plant zonation, and high biodiversity. Isolated wetlands, however, do not represent ecologically isolated habitat for many organisms. I conclude that the effect of isolation may not be as significant as the term "isolated wetlands" suggests: many of the biological features of isolated wetlands may result from environmental conditions that also occur in non-isolated wetlands. As a result of SWANCC, assessment methods are needed that can help regulators distinguish between jurisdictional and non-jurisdictional isolated wetlands. I propose that the merger of simple, source-sink-transport vector concepts with landscape-level assessment methods could be useful in this regard. I point to the need for documented examples of organisms that spend most of their lives in waters of the U.S. but also require isolated wetlands. I conclude that wetland science would benefit from the development of a comprehensive view of isolation as a formative process across different regional wetland types.

Key Words: dispersal, isolation, connectivity, isolation-connectivity continuum, depressional wetlands, SWANCC, Clean Water Act, waters of the United States

INTRODUCTION

On January 9, 2001, the U.S. Supreme Court issued a ruling in the case of *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers*, 531 U.S. 159 (2001) (SWANCC). In a 5-4 decision, the Court found that the Migratory Bird Rule, which deemed waters of the United States to include isolated intrastate waters that provide habitat for migratory birds, exceeded the U.S. Army Corps of Engineers' (Corps) authority under the Clean Water Act (531 U.S. 159 (2001)). The SWANCC decision limited the kind of wetlands that are within Federal jurisdiction and, thus, subject to regulation under the Clean Water Act (Downing et al. 2003).

Given the controversy over isolated wetlands and the regulatory turmoil caused by the SWANCC decision, now is an opportune time to review our scientific understanding of isolated wetlands. One motivation for this is that such information could be useful for future

policy-making, both at federal and state levels. Information in three areas could be particularly helpful: what isolated does and does not mean; the functions of isolated wetlands; and ways in which isolated wetlands and their functions contribute to the physical, chemical, and biological integrity of other waters of the U.S.

Beyond its potential usefulness for policymakers, there is a more fundamental reason for a review of isolated wetlands: to assess our state of understanding and to identify holes in our knowledge of this common wetland type. In particular, one issue that has received little attention is how wetlands respond to isolation. Isolation is considered an important factor in much of ecology. Darwin's studies of the finches of the Galapagos Islands demonstrated that isolation plays a critical role in evolutionary biology. Isolation is also recognized as being a fundamental influence on the biogeographic distribution of species, population genetics,

ISOLATED WETLANDS: STATE-OF-THE-SCIENCE AND FUTURE DIRECTIONS

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Abstract: In *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* (SWANCC), the U.S. Supreme Court held that isolated, intrastate, non-navigable waters could not be protected under the Clean Water Act based solely on their use by migratory birds. The SWANCC decision has created a need to compile and make available scientific information for post-SWANCC policy development. In response, this article reviews the state of our scientific understanding of isolated wetlands, based on the major findings of papers contributed to this special issue of *Wetlands*. Because the term "isolated wetland" has not been used consistently in the scientific literature, we recommend that geographically isolated wetlands be defined as "wetlands that are completely surrounded by upland," as proposed by Tiner, for the purposes of scientific studies. Geographically isolated wetlands are not homogeneous but have a broad range of functional response, partly due to their occurrence over a wide range of climatic and geologic settings. One major question addressed through this special issue is the role that isolation plays in the function of geographically isolated wetlands. It appears that isolation is not a primary factor and that many of the functions performed by isolated wetlands are also performed by non-isolated wetlands and non-wetland ecosystems. Variability in moisture conditions plays an important role in the function of many geographically isolated wetlands. However, hydrologic isolation may affect moisture conditions, and biotic isolation could be important for certain populations. Depending on the factor being considered, geographically isolated wetlands are not entirely isolated but are better viewed as occurring within an isolation-connectivity continuum that has both hydrologic and biotic expressions. The juxtaposition of isolation and connectivity occurring in geographically isolated wetlands may represent a semi-isolated state that uniquely shapes these wetlands and their functions. Comprehensive data, designating the number, total area, and functional classification of isolated wetlands, would provide the foundation for monitoring impacts to isolated wetlands. Studies are needed to examine and quantify how isolated wetlands, wetland complexes, and other potentially impacted waters contribute hydrologically, chemically, and biologically to waters of the U.S. Methods to assess and map the degree of connectivity between geographically isolated wetlands and waters of the U.S., based on ground-water travel time, recurrence frequency of intermittent surface-water connections, and home ranges of species that require both types of waters, could be useful for regulators. Whatever policies are developed, scientific input and technical information will continue to play a crucial role in the policy and regulatory arena. Maintaining and enhancing the dialogue among wetland scientists, policy-makers, and regulators will ensure that critical information is developed and communicated and also continue to invigorate wetland science.

Key Words: isolation, connectivity, depressional wetlands, wetland function, SWANCC, Clean Water Act, waters of the United States

INTRODUCTION

The U.S. Clean Water Act (CWA), enacted in 1972 as a comprehensive effort to control water pollution, has "navigable waters" as its jurisdictional scope. Navigable waters are defined in the CWA as "waters of the United States, including the territorial seas."

The U.S. Environmental Protection Agency (EPA) is charged with administering the CWA, with CWA Section 404 co-administered by EPA and the U.S. Army Corps of Engineers (Corps). Section 404 establishes a program to protect the nation's waters by requiring a permit for the discharge of dredged or fill material into waters of the United States, including wetlands. The



Outline of Talk

- **Overview of Supreme Court decision**
- **Review findings on isolated wetlands**



The Clean Water Act

- **Commerce Clause of US Constitution is basis for defining “waters of the United States”**
- **1972 CWA jurisdictional scope is “navigable waters”**



“Waters of the U.S.”

- **Waters used in interstate or foreign commerce**
- **Interstate waters**
- **Intrastate lakes, rivers, streams, wetlands the use, degradation or destruction of which could affect interstate commerce [“(a)(3)” regs]**



“Waters of the U.S.”

- **Impoundments of waters of the U.S.**
- **Tributaries of above waters**
- **Territorial seas**
- **Wetlands adjacent to above waters**



The “Migratory Bird Rule”

Regulatory preamble provided examples of commerce links

- Use as habitat by migratory birds**
- Use as habitat for endangered species**
- Use to irrigate crops sold in commerce**



SWANCC

- **§404 permit for a landfill on an abandoned sand and gravel pit**
- **Corps asserted jurisdiction based on presence of migratory birds**
- **SWANCC sued after permit application denied**



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Petitioner Congress that it intended to use the solid waste disposal site an abandoned sand and gravel pit with excavation to create a habitat for migratory birds and other wildlife. Petitioner caused the operation of the site to be subject to the permit process and contacted federal respondents, including the Army Corps of Engineers (Corps), to determine if a landfill permit was required under §404(a) of the Clean Water Act (CWA), which authorizes the Corps to issue permits allowing the discharge of dredged or fill material into “navigable waters.” The CWA defines “navigable waters” as “the waters of the United States,” 33 U.S.C. §1362(7), and the Corps’ regulations define such waters to include intrastate waters, “the use, degradation or destruction of which could affect interstate or foreign commerce,” 33 CFR §328.26.(3). In 1986, the Corps attempted to assert its jurisdiction stating that it has been given the authority to regulate the discharge of §404(a) extends to intrastate waters that, *inter alia*, provide habitat for migratory birds. 33 CFR 132.17. Petitioner’s jurisdiction over the intrastate waters was challenged by the Corps’ permit. When petitioner challenged the Corps’ jurisdiction and the merits of the permit, the Corps’ jurisdiction was affirmed by the summary judgment on the jurisdictional issue. The Seventh Circuit held that the Corps has authority over the Corps’ Cause to regulate intrastate waters under the CWA. Petitioner’s reasonable interpretation of the CWA.

Held: Title 33 CFR §328.3(a)(3), as clarified and applied to petitioner's site pursuant to the Migratory Bird Rule, exceeds the authority granted to respondents under §404(a) of the CWA. Pp. 166-174.

(a) In *United States v. Riverside Bayview Homes, Inc.*, 474 U.S. 121, this Court held that the Corps had § 404(a) jurisdiction over wetlands adjacent to a navigable waterway, noting that the term “navigable” is of “limited import” and that Congress evidenced its intent to “regulate at least some waters that would not be deemed ‘navigable’ under [that term’s] classical understanding,” *id.*, at 133. But that holding was based in large measure upon Congress’ unequivocal acquiescence to, and

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(b) The Corps' original interpretation of the CWA in its 1974 regulation is inconsistent both with the intent of Congress in passing the act by the public for transportation or commerce determines whether it is navigable—is inconsistent both that which respondents contend was the intent in 1974. Respondents contend that whatever its original aim, when Congress passed the CWA in 1977, it approved the more expansive definition of "navigable waters" found in the Corps' 1977 regulations. Specifically, respondents submit that Congress' failure to pass legislation that would have overturned the 1977 regulations and the extension of the Environmental Protection Agency's jurisdiction in §404(g) to include waters "other than" traditional "navigable waters" indicates that Congress recognized and accepted a broad definition of "navigable waters" that includes nonnavigable, isolated, intrastate waters. This Court recognizes congressional acquiescence to administrative interpretations of a statute with extreme care. Failed legislative proposals are a particularly dangerous ground on which to rest an interpretation of a statute. See, e.g., *United States v. Bank of Denver, N.A.*, 511 U.S. 164, 187, because such can be proposed or rejected for reasons unrelated to the merits of the proposal. Respondents have failed to make the necessary showing that Congress' failure to pass legislation demonstrates acquiescence to the 1977 regulations or the 1986 Migratory Bird Rule. Respondents' argument is also troubling, for it does not conclusively determine the construction to be placed on the use of the term "waters" elsewhere in the CWA. *Riverside Bayview Homes*, supra, at 138, n. 11. Pp. 168–172.

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Regulatory Implications

- **CWA intended some “connection” to navigability**
- **Isolated waters need “significant nexus” to navigable waters to be jurisdictional**



Need for Science

Post-SWANCC debate (scientific, legal, political) and regulatory uncertainty made it timely to review our scientific understanding of isolated waters



Need for Science

**Invited symposium on isolated wetlands
at 2002 SWS Annual Meeting in Lake
Placid**



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RESEARCH & DEVELOPMENT

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What is an *Isolated Wetland*?

- Recent term; not consistently applied
- Hydrological and biological definitions, but require detailed information



What is an *Isolated Wetland*?

Geographically isolated wetlands

- Wetlands completely surrounded by upland (Tiner 2003b)
- Practical, can use three parameter approach



Prairie potholes



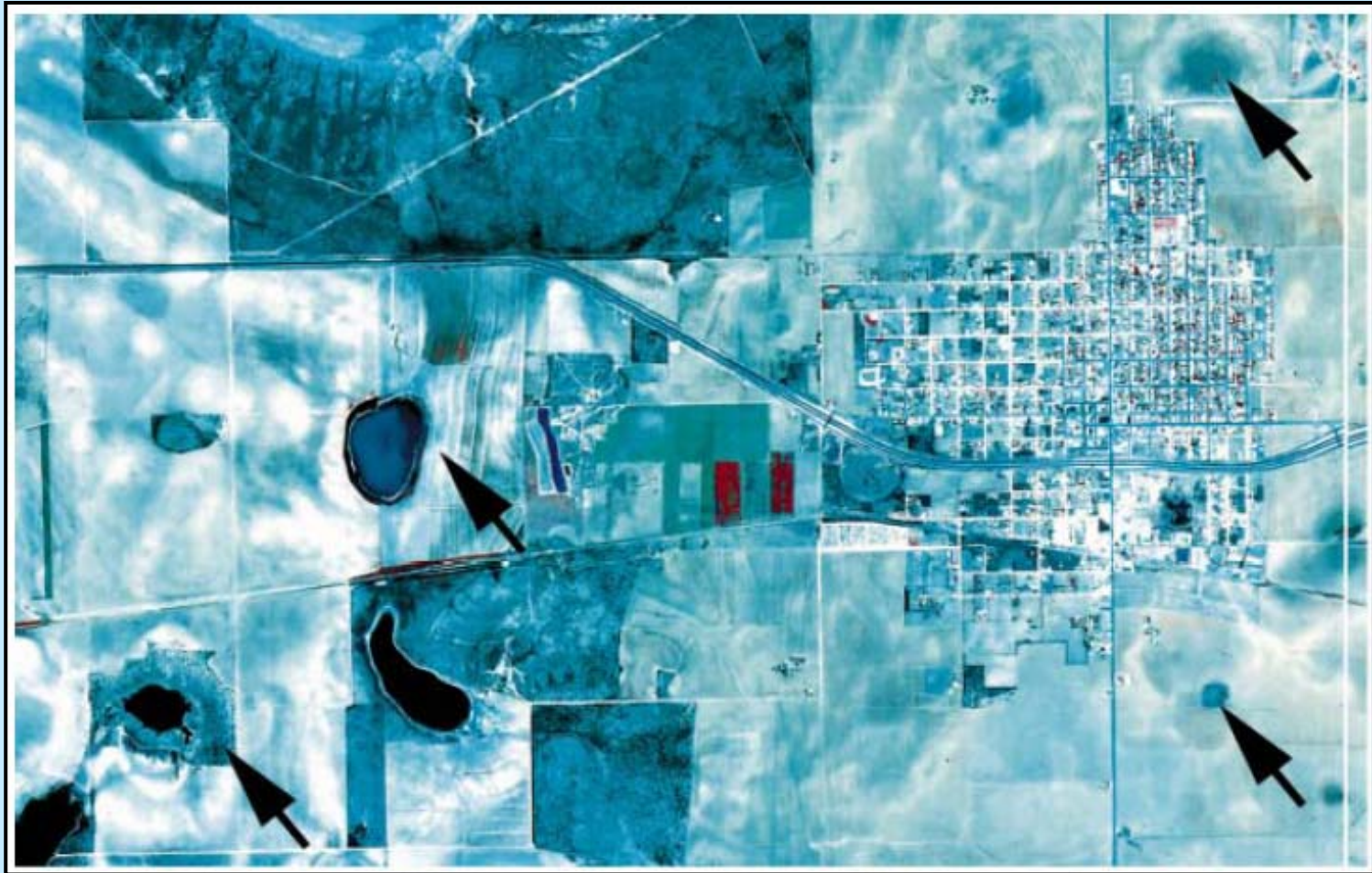
Source: Tiner 2003b



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Playa lakes



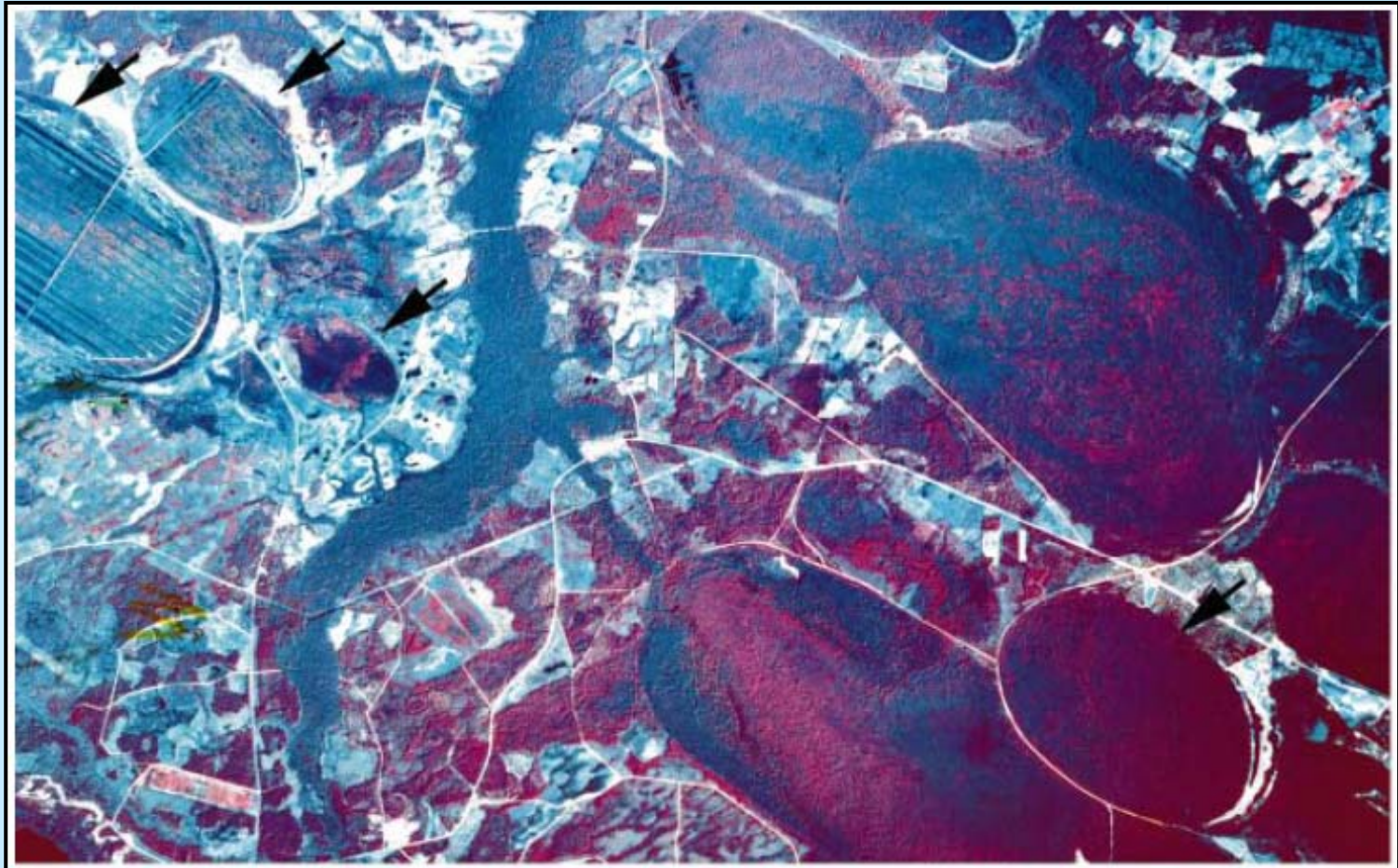
Source: Tiner 2003b



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Carolina bays



Source: Tiner 2003b



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California vernal pool

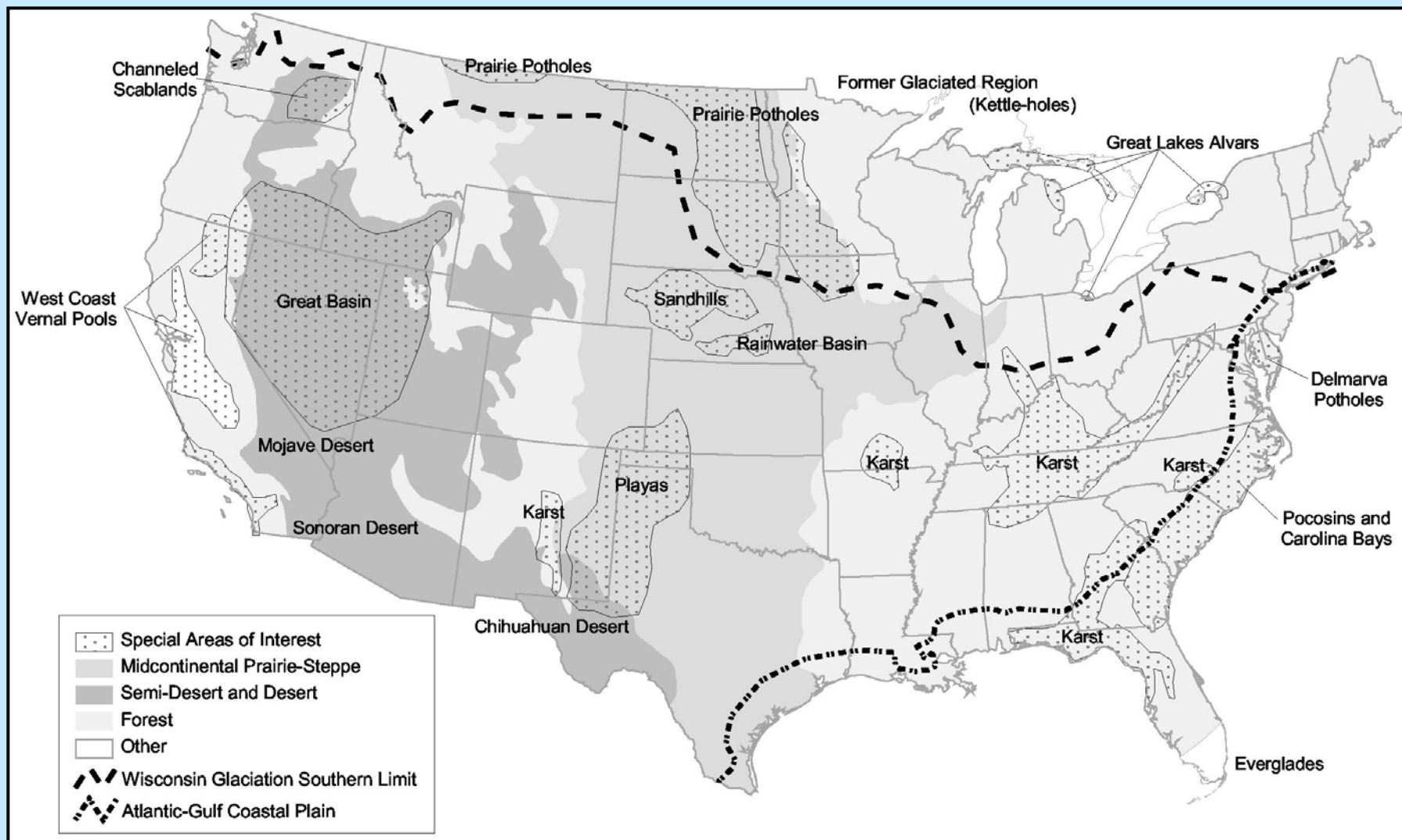


Source: Tiner 2003b



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Source: Tiner 2003b



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Areal Extent of Resource

State estimates

NE (50-90%), WI (24%), IL (12%), IN (32-85% in number)

National estimates

Likens et al. (professional judgment): 20%

Tiner 2003a (non-random): 26%



Isolated Wetland Function

- **No rigorous comparison of functions**
- **Not functionally homogeneous**
- **Occurrence over wide geographic, environmental, and climatic range**
- **Perform many of the same functions as non-isolated wetlands**



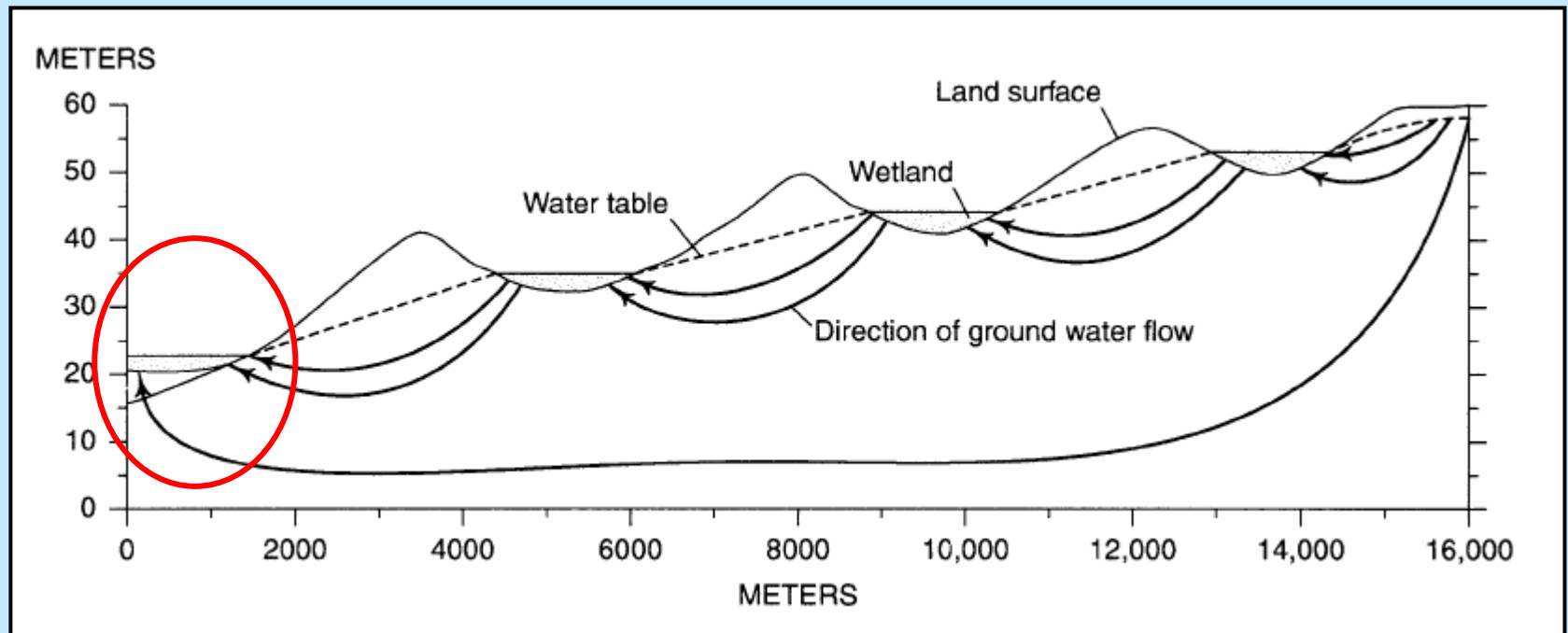
Are Isolated Wetlands Isolated?

Hydrologic connectivity

- Ground water



Groundwater Connectivity



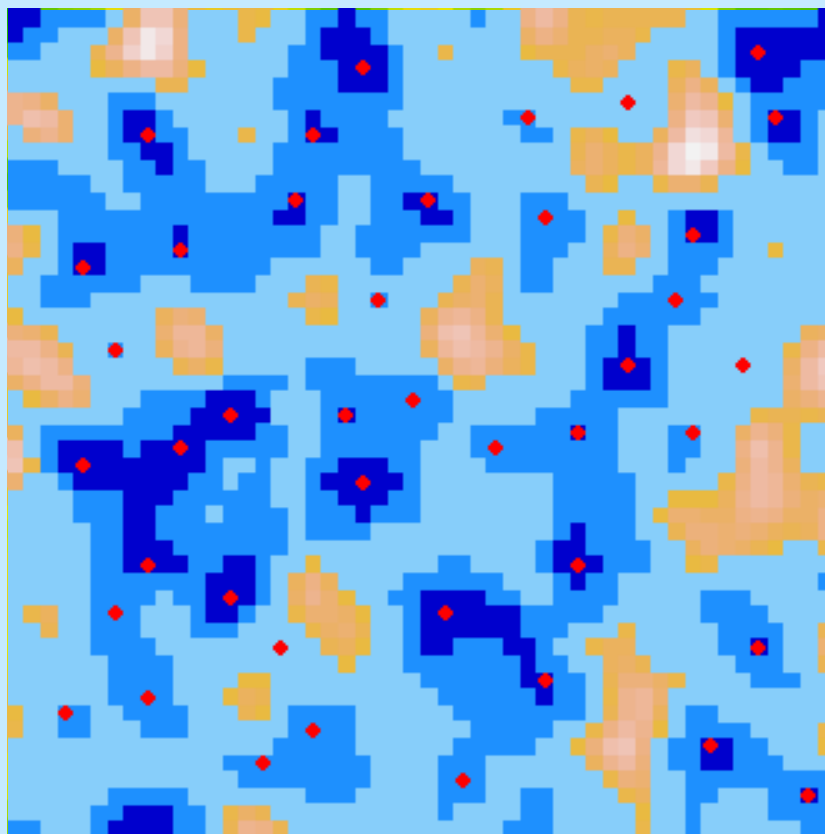
Source: Winter and LaBaugh 2003

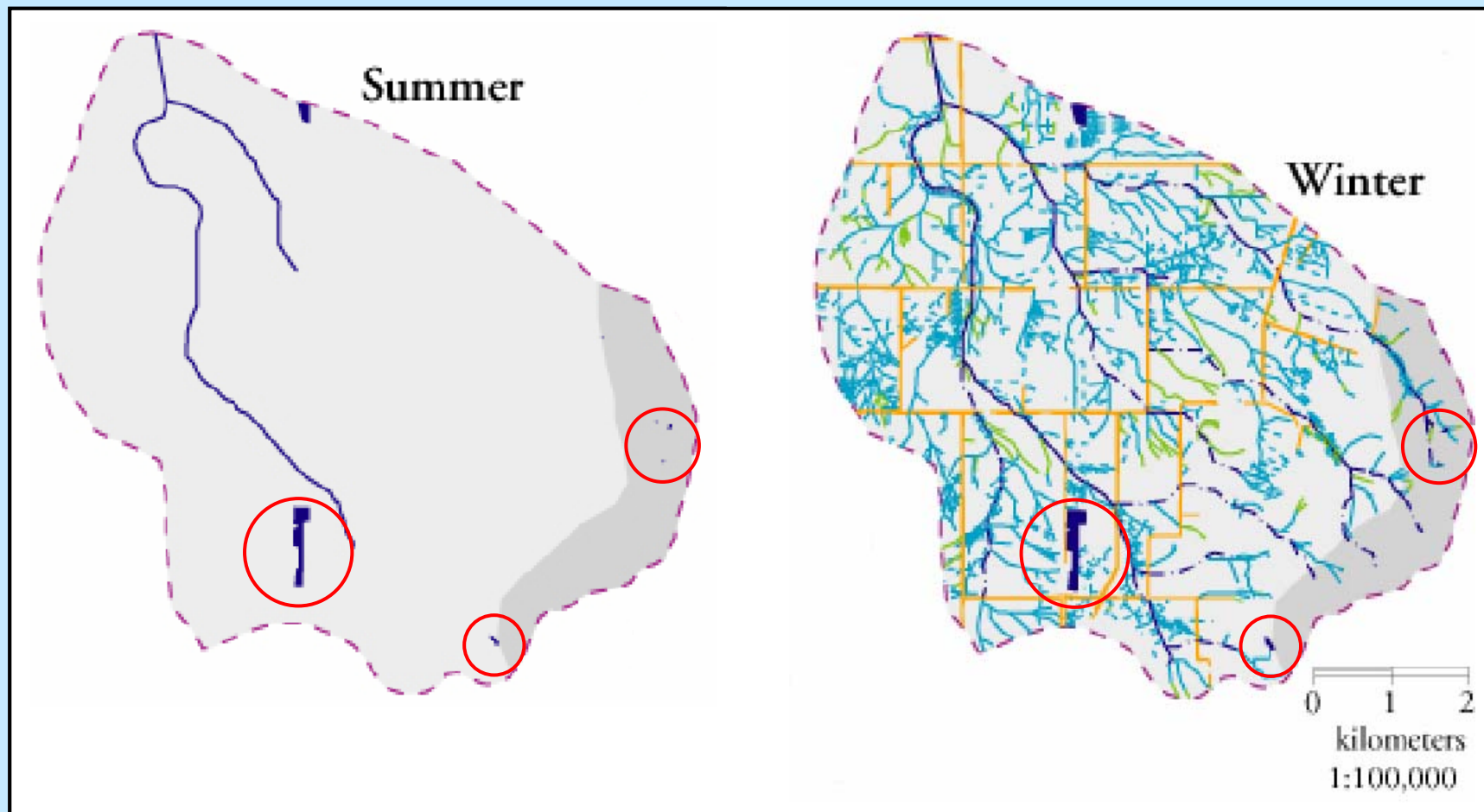
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Hydrologic connectivity

- Ground water
- Intermittent surface-water connections







Source: Wigington et al. 2005

Are Isolated Wetlands Isolated?

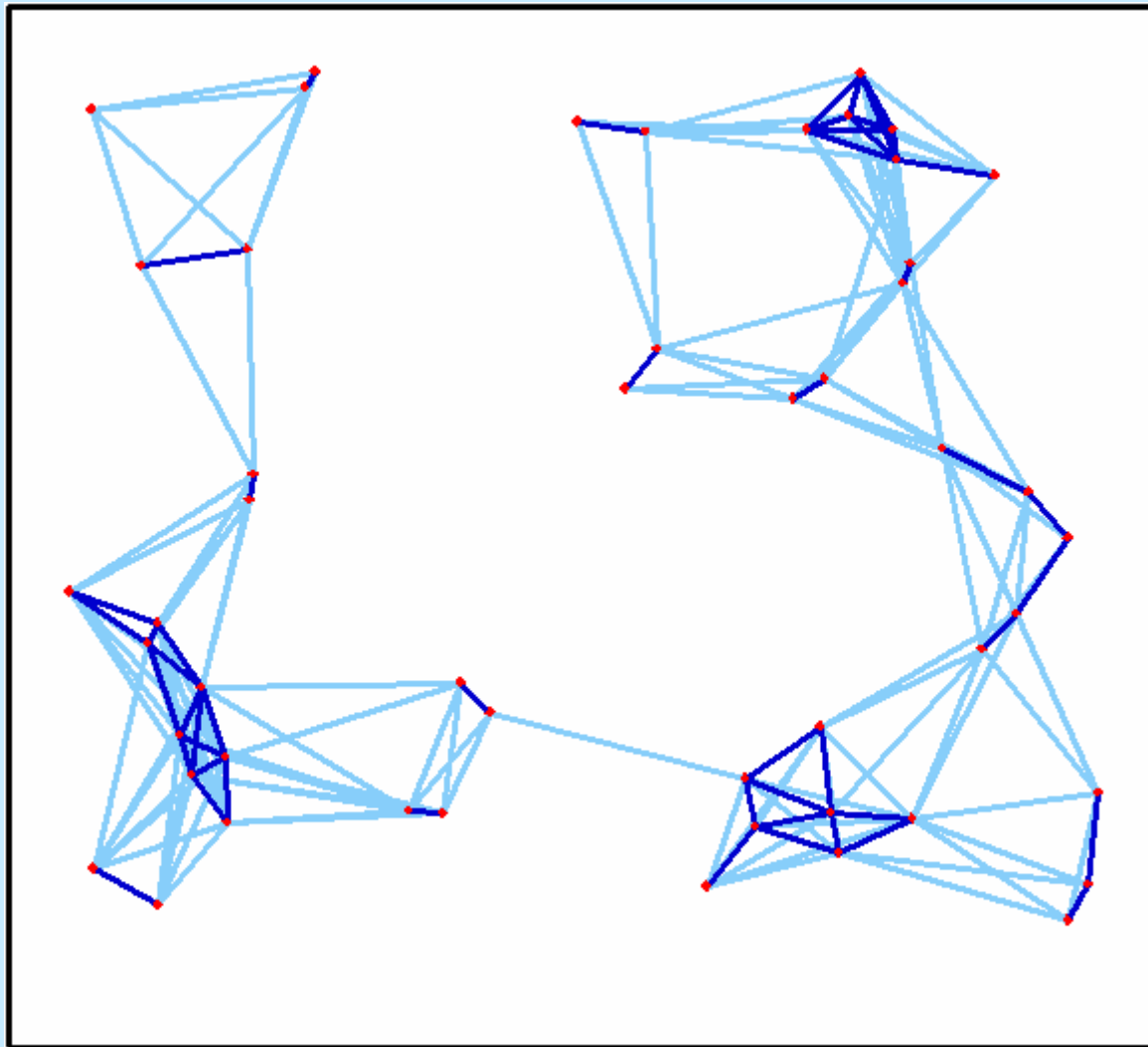
Hydrologic connectivity

- Ground water
- Intermittent surface-water connections

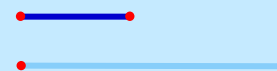
Biotic connectivity

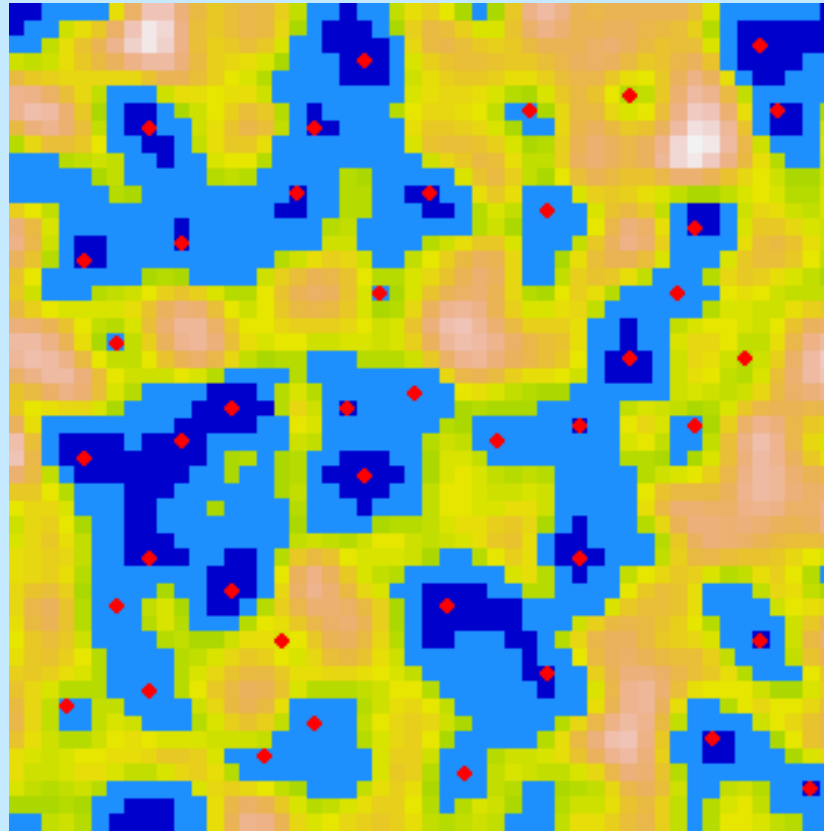
- Dispersal





Maximum Travel Distance





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Are Isolated Wetlands Isolated?

Hydrologic connectivity

- Ground water
- Intermittent surface-water connections

Biotic connectivity

- Dispersal
- Distance between wetlands, flood frequency, dispersal distance



Isolation as Continuum

- Isolation not a discrete, generic property, but should be viewed as a spatial and temporal continuum
- Juxtaposition of isolation and connectivity may uniquely shape isolated wetlands as a resource
- May represented “semi-isolated” systems



Effect of Isolation on Function

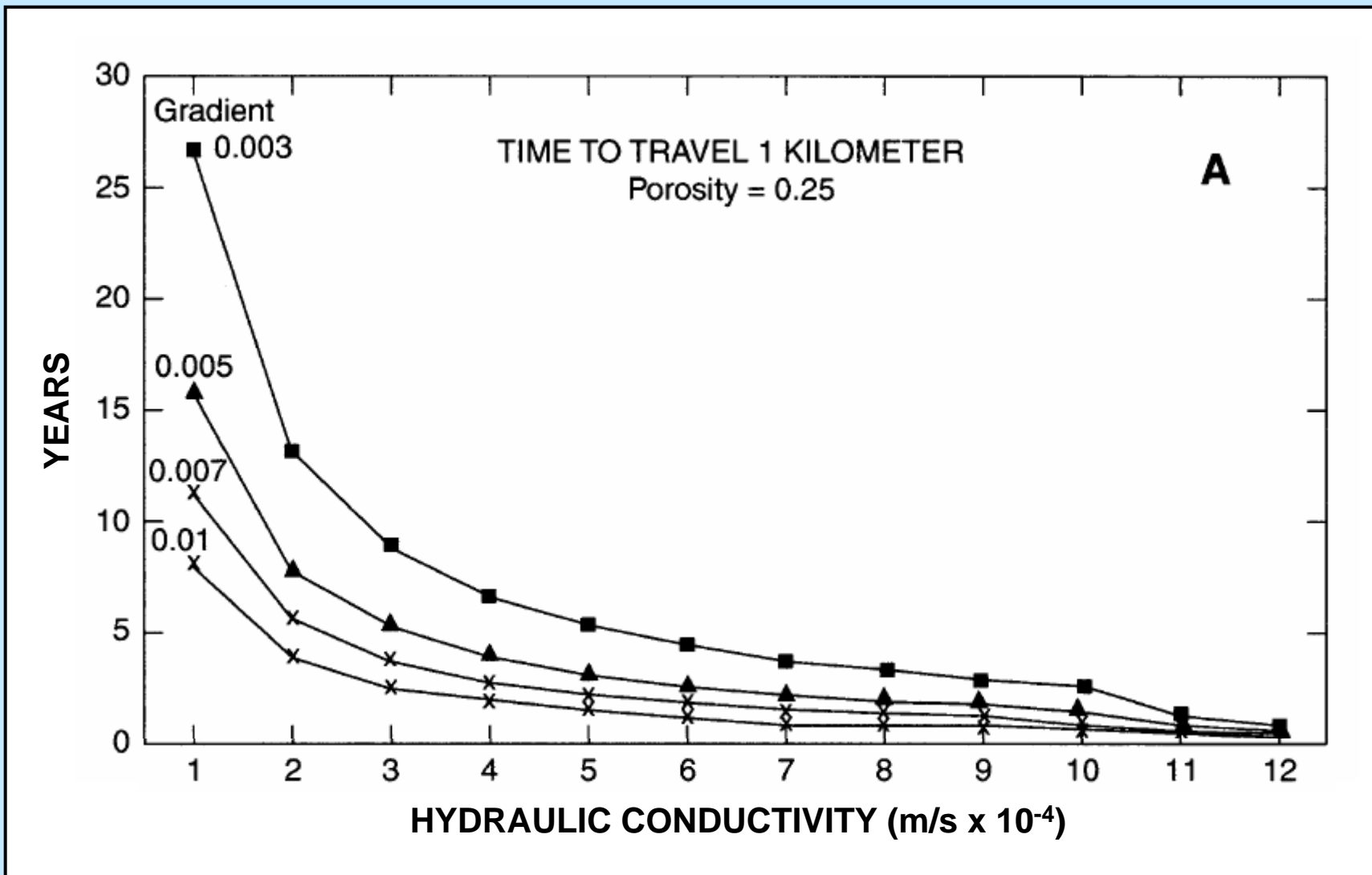
- Does not appear to be primary factor
- For habitat, moisture conditions may be more important
- Isolation may indirectly affect moisture
- Isolation may play biotic role



Mapping Connectivity

- Ground-water travel time





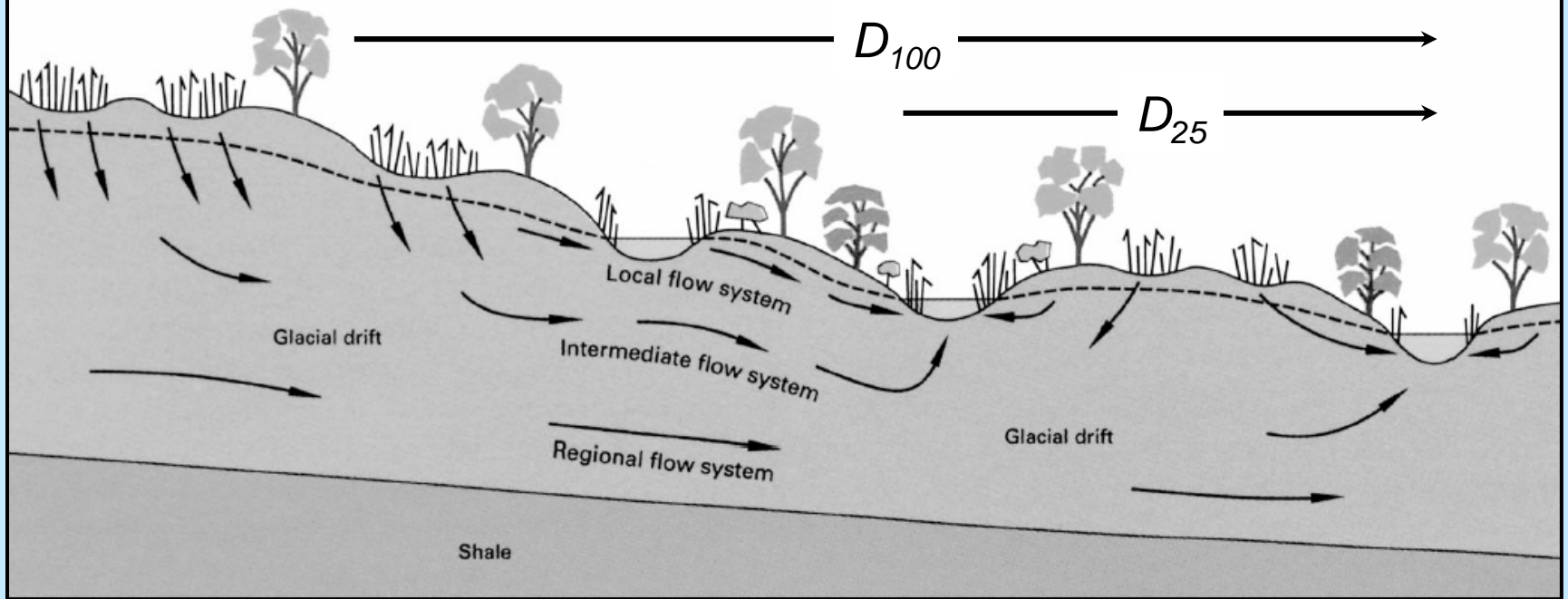
Source: Winter and LaBaugh 2003



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$$D_t = v t c = K (dh/dl) n_e^{-1} t c$$

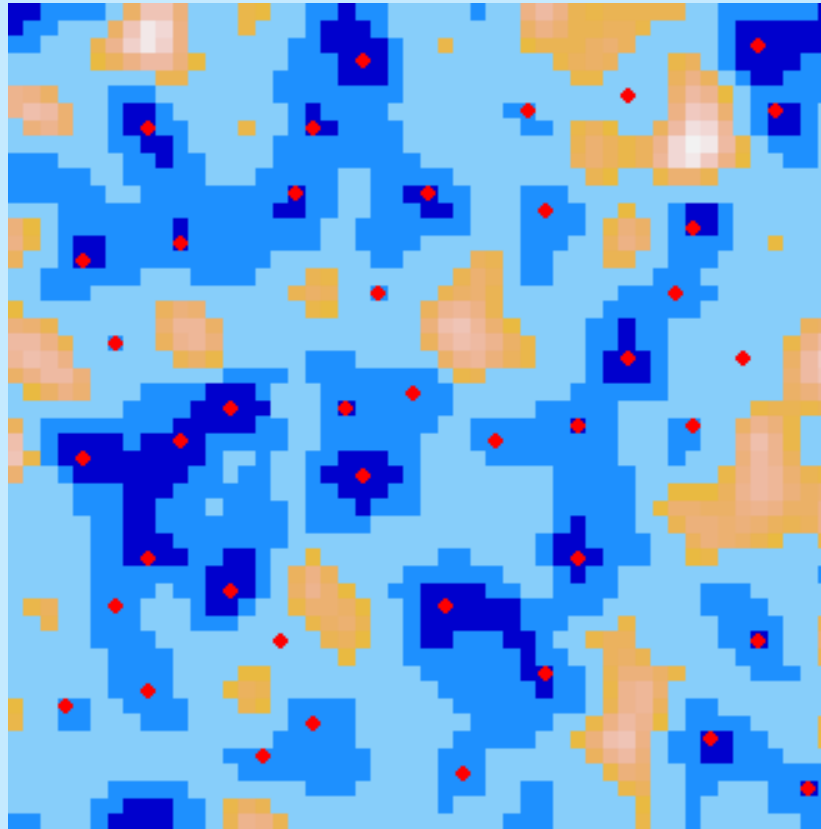


Adapted from Sando 1996

Mapping Connectivity

- Ground-water travel time
- **Surface-water recurrence frequency**

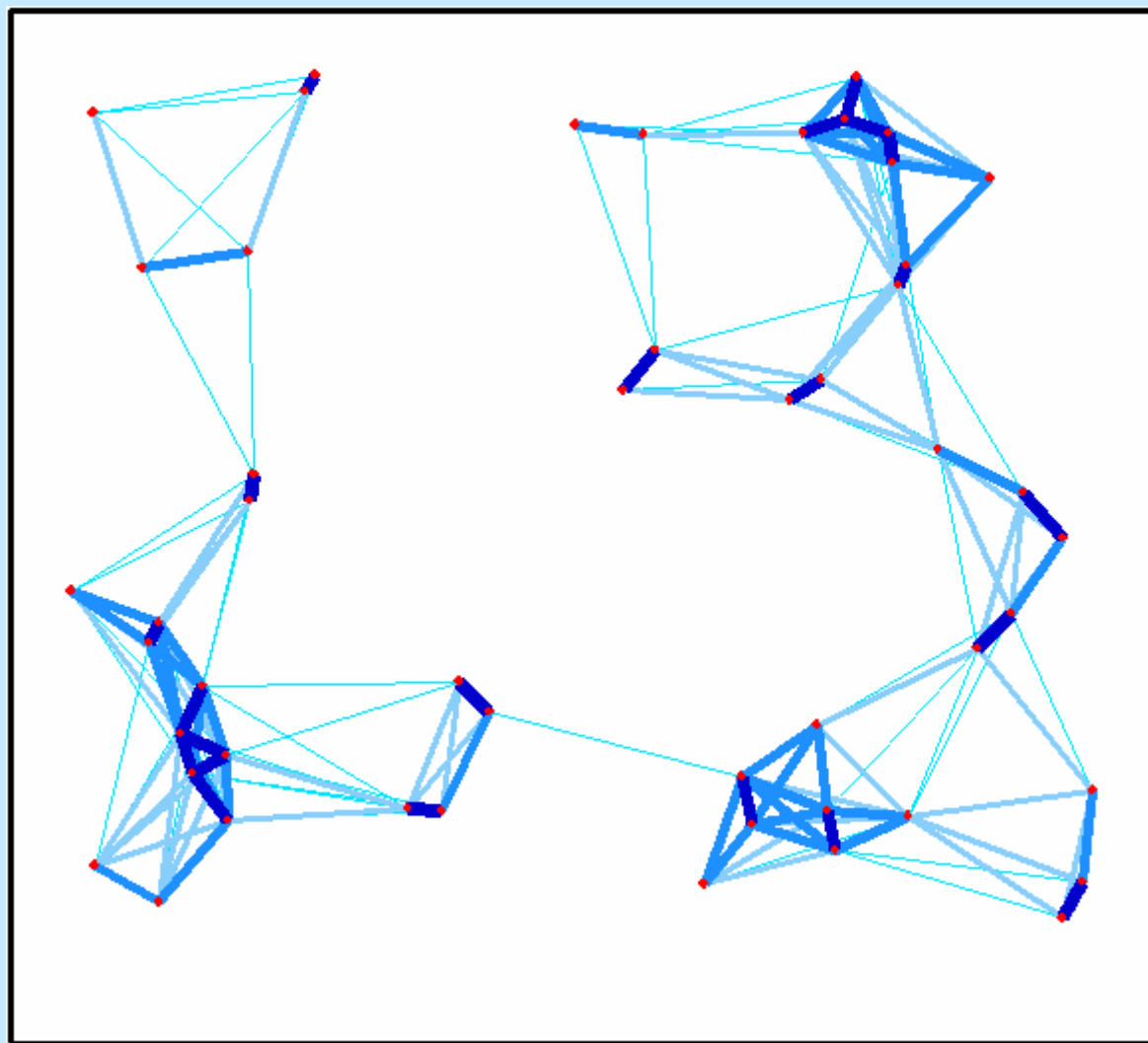




Mapping Connectivity

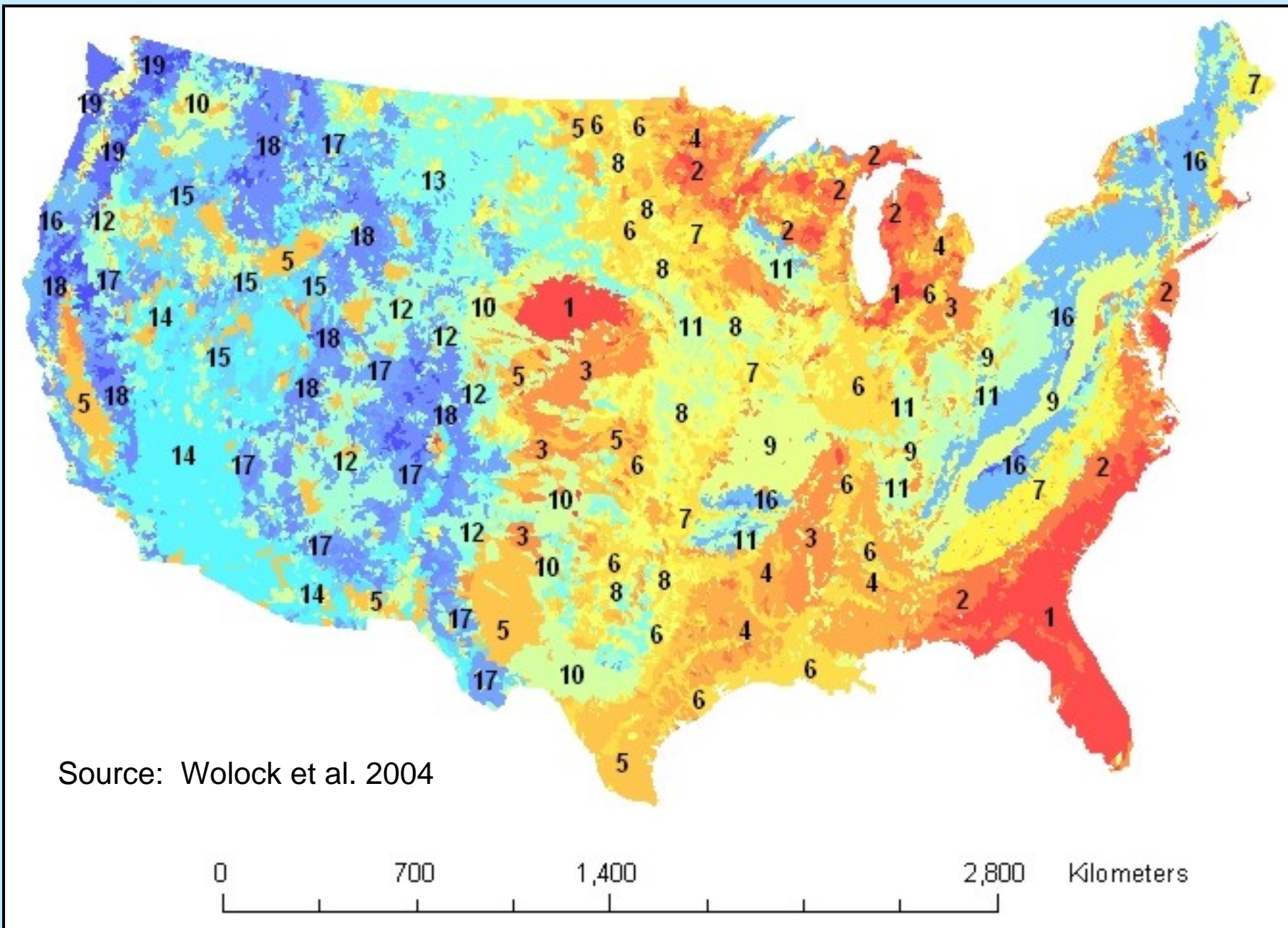
- Ground-water travel time
- Surface-water recurrence frequency
- **Dispersal distance**





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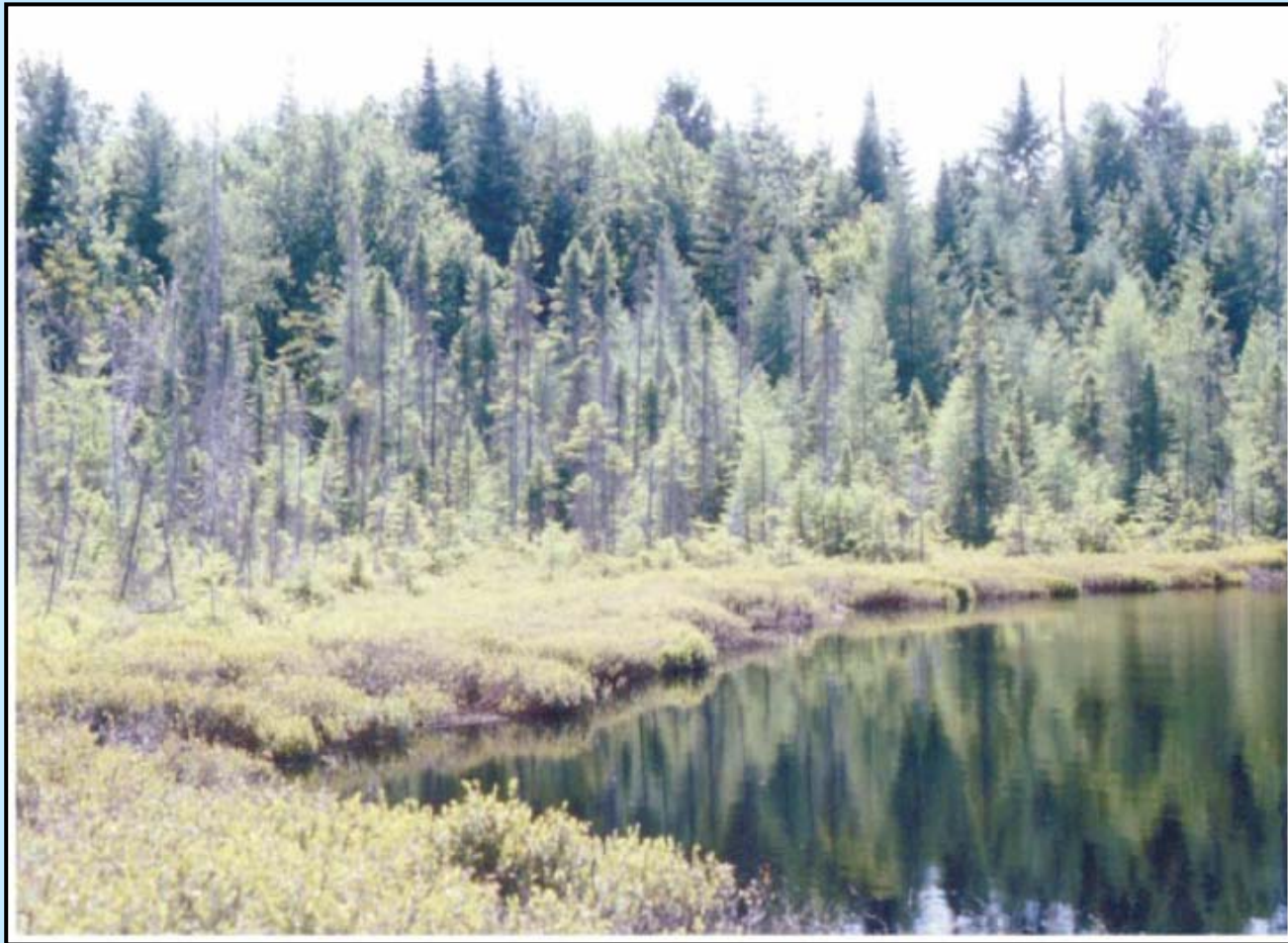
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Future Needs

- **Documentation of functions and values**
- **Methods to assess hydrologic and biotic connections to waters of the U.S.**
- **Assess contributions to broader CWA goals (e.g., attainment of designated use)**
- **Development of rapid assessment techniques**



Questions



Source: Tiner 2003b



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